

LANGEL 09/882519 Page 1

=> file reg

FILE 'REGISTRY' ENTERED AT 14:34:17 ON 12 JUN 2003
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STRUCTURE FILE UPDATES: 11 JUN 2003 HIGHEST RN 529474-19-9
DICTIONARY FILE UPDATES: 11 JUN 2003 HIGHEST RN 529474-19-9

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2003

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP
PROPERTIES for more information. See STNote 27, Searching Properties
in the CAS Registry File, for complete details:
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> file hcplus

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FILE COVERS 1907 - 12 Jun 2003 VOL 138 ISS 24
FILE LAST UPDATED: 11 Jun 2003 (20030611/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d que 140

L7	1 SEA FILE=REGISTRY ABB=ON	HYDROGEN/CN
L8	1 SEA FILE=REGISTRY ABB=ON	OXYGEN/CN
L11	1 SEA FILE=REGISTRY ABB=ON	"2-PROPANOL, 2-METHYL-"/CN
L12	0 SEA FILE=REGISTRY ABB=ON	METAXYLENE
L13	1 SEA FILE=REGISTRY ABB=ON	ORTHOXYLENE/CN
L14	0 SEA FILE=REGISTRY ABB=ON	PARAXYLENE
L16	6 SEA FILE=REGISTRY ABB=ON	ETHYLENE/CN OR PROPANE/CN OR PORYLENE/CN OR N-BUTANE/CN OR ISOBUTANE/CN OR ISOBUTYLENE/CN OR T-BUTYL ALCOHOL/CN OR ORTHOXYLENE/CN OR METAXYLENE/CN OR

KATHLEEN FULLER EIC 1700/PARKER LAW 308-4290

	PARAXYLENE/CN	
L17	8 SEA FILE=REGISTRY ABB=ON L13 OR L14	L16 OR PROPYLENE/CN OR L11 OR L12 OR
L18	1 SEA FILE=REGISTRY ABB=ON	PERFLUOROPENTANE/CN
L19	1 SEA FILE=REGISTRY ABB=ON	PERFLUOROHEXANE/CN
L20	1 SEA FILE=REGISTRY ABB=ON	PERFLUOROHEPTANE/CN
L21	1 SEA FILE=REGISTRY ABB=ON	PERFLUOROOCTANE/CN
L22	4 SEA FILE=REGISTRY ABB=ON	(L18 OR L19 OR L20 OR L21)
L23	2022822 SEA FILE=HCAPLUS ABB=ON	L7 OR H2 OR HYDROGEN OR FEED# OR HYDROCARBON# OR L17 OR ETHYLENE OR PROPANE OR PROPYLENE OR N-BUTANE OR ISOBUTANE OR ISOBUTYLENE OR T(W) BUTYL (W) ALCOHOL OR ORTHOXYLENE OR METAXYLENE OR PARAXYLENE
L24	35501 SEA FILE=HCAPLUS ABB=ON	L23(L) OXIDI?
L25	1460421 SEA FILE=HCAPLUS ABB=ON	L8 OR O2 OR OXYGEN OR AIR
L26	11818 SEA FILE=HCAPLUS ABB=ON	L24 AND L25
L27	20572 SEA FILE=HCAPLUS ABB=ON	L22 OR ?FLUORO? (5A) (SOLVENT? OR SOLUTION?)
L28	16 SEA FILE=HCAPLUS ABB=ON	L26 AND L27
L29	10 SEA FILE=HCAPLUS ABB=ON	L28 AND (CAT/RL OR CATALY?)
L30	7 SEA FILE=HCAPLUS ABB=ON	L28 AND (AU OR AG OR PT OR PD OR IR OR RH OR HG OR RU OR OS OR GOLD OR SILVER OR PLATIN? OR PALLAD? OR IRIDIUM OR RHENIUM OR MERCUR? OR RUTHEN? OR OSMIUM)
L31	12 SEA FILE=HCAPLUS ABB=ON	L29 OR L30
L32	12 SEA FILE=HCAPLUS ABB=ON	L28 AND OXIDATION/IT
L33	13 SEA FILE=HCAPLUS ABB=ON	L31 OR L32
L35	276 SEA FILE=HCAPLUS ABB=ON	L26 AND ?FLUORO?
L36	118 SEA FILE=HCAPLUS ABB=ON	L35 AND OXIDATION/IT
L38	19 SEA FILE=HCAPLUS ABB=ON	L36 AND (AU OR AG OR PT OR PD OR IR OR RH OR HG OR RU OR OS OR GOLD OR SILVER OR PLATIN? OR PALLAD? OR IRIDIUM OR RHENIUM OR MERCUR? OR RUTHEN? OR OSMIUM) (L) (CAT/RL OR CATAL?)
L39	4 SEA FILE=HCAPLUS ABB=ON	L38 AND (SOLVENT# OR SOLUTION?)
<u>L40</u>	<u>14 SEA FILE=HCAPLUS ABB=ON</u>	<u>L33 OR L39</u>

=> file wpix
FILE 'WPIX' ENTERED AT 14:34:32 ON 12 JUN 2003
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FILE LAST UPDATED: 9 JUN 2003 <20030609/UP>
MOST RECENT DERWENT UPDATE: 200336 <200336/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> NEW WEEKLY SDI FREQUENCY AVAILABLE --> see NEWS <<<

>>> SLART (Simultaneous Left and Right Truncation) is now available in the /ABEX field. An additional search field /BIX is also provided which comprises both /BI and /ABEX <<<

>>> PATENT IMAGES AVAILABLE FOR PRINT AND DISPLAY <<<

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SEE <http://www.derwent.com/dwpi/updates/dwpicov/index.html> <<<

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GUIDES, PLEASE VISIT:
[<<<](http://www.derwent.com/userguides/dwpi_guide.html)

=> d que 134

L7 1 SEA FILE=REGISTRY ABB=ON HYDROGEN/CN
L8 1 SEA FILE=REGISTRY ABB=ON OXYGEN/CN
L11 1 SEA FILE=REGISTRY ABB=ON "2-PROPANOL, 2-METHYL-"/CN
L12 0 SEA FILE=REGISTRY ABB=ON METAXYLENE
L13 1 SEA FILE=REGISTRY ABB=ON ORTHOXYLENE/CN
L14 0 SEA FILE=REGISTRY ABB=ON PARAXYLENE
L16 6 SEA FILE=REGISTRY ABB=ON ETHYLENE/CN OR PROPANE/CN OR
PORPYLENE/CN OR N-BUTANE/CN OR ISOBUTANE/CN OR ISOBUTYLENE/CN
OR T-BUTYL ALCOHOL/CN OR ORTHOXYLENE/CN OR METAXYLENE/CN OR
PARAXYLENE/CN
L17 8 SEA FILE=REGISTRY ABB=ON L16 OR PROPYLENE/CN OR L11 OR L12 OR
L13 OR L14
L18 1 SEA FILE=REGISTRY ABB=ON PERFLUOROPENTANE/CN
L19 1 SEA FILE=REGISTRY ABB=ON PERFLUOROHEXANE/CN
L20 1 SEA FILE=REGISTRY ABB=ON PERFLUOROHEPTANE/CN
L21 1 SEA FILE=REGISTRY ABB=ON PERFLUOROOCTANE/CN
L22 4 SEA FILE=REGISTRY ABB=ON (L18 OR L19 OR L20 OR L21)
L23 2022822 SEA FILE=HCAPLUS ABB=ON L7 OR H2 OR HYDROGEN OR FEED# OR
HYDROCARBON# OR L17 OR ETHYLENE OR PROPANE OR PROPYLENE OR
N-BUTANE OR ISOBUTANE OR ISOBUTYLENE OR T(W) BUTYL (W) ALCOHOL
OR ORTHOXYLENE OR METAXYLENE OR PARAXYLENE
L24 35501 SEA FILE=HCAPLUS ABB=ON L23(L)OXIDI?
L25 1460421 SEA FILE=HCAPLUS ABB=ON L8 OR O2 OR OXYGEN OR AIR
L26 11818 SEA FILE=HCAPLUS ABB=ON L24 AND L25
L27 20572 SEA FILE=HCAPLUS ABB=ON L22 OR ?FLUORO?(5A) (SOLVENT? OR
SOLUTION?)
L28 16 SEA FILE=HCAPLUS ABB=ON L26 AND L27
L29 10 SEA FILE=HCAPLUS ABB=ON L28 AND (CAT/RL OR CATALY?)
L30 7 SEA FILE=HCAPLUS ABB=ON L28 AND (AU OR AG OR PT OR PD OR IR
OR RH OR HG OR RU OR OS OR GOLD OR SILVER OR PLATIN? OR
PALLAD? OR IRIDIUM OR RHENIUM OR MERCUR? OR RUTHEN? OR OSMIUM)
L31 12 SEA FILE=HCAPLUS ABB=ON L29 OR L30
L32 12 SEA FILE=HCAPLUS ABB=ON L28 AND OXIDATION/IT
L34 7 SEA FILE=WPIX ABB=ON L31 OR L32

=> dup rem 140 134

FILE 'HCAPLUS' ENTERED AT 14:34:45 ON 12 JUN 2003
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PROCESSING COMPLETED FOR L40

PROCESSING COMPLETED FOR L34

L41 21 DUP REM L40 L34 (0 DUPLICATES REMOVED)

=> d 141 all 1-21 hitstr

L41 ANSWER 1 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 2003:355495 HCAPLUS
DN 138:356006

TI Oxidation-extraction removal of organosulfur compounds from hydrocarbon fuels by contact with ionic liquids
 IN Schoonover, Roger E.
 PA USA
 SO U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM C10G029-00
 NCL 208230000
 CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003085156	A1	20030508	US 2002-289931	20021106
	WO 2003040264	A1	20030515	WO 2002-US35749	20021106
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRAI US 2001-331076P P 20011106

AB Sulfur compds. are removed from a fuel stream by extn. of the fuel in an ionic liq. (selected from quaternary ammonium compds. and phosphonium compds.), followed by sepn. of the **hydrocarbon** phase, optionally in the presence of an **oxidizing** agent which **oxidizes** the sulfur compds. to sulfoxides or sulfones during the extn. step. Preferred ionic liqs. include alkylpyridinium, dialkylimidazolium, trialkylimidazolium, and trialkylamine cations. Fuels that can be desulfurized by this method are gasoline, crude petroleum, liquefied petroleum gases, diesel fuel, jet fuel, and distillate fuel oils. Desulfurization is carried out at .ltoreq.200.degree., .ltoreq.50 atm., for .ltoreq.1 h.

ST hydrocarbon fuel desulfurization extn ionic liq; organosulfur oxidn fuel desulfurization ionic liq; quaternary ammonium ionic liq petroleum desulfurization; phosphonium ionic liq petroleum desulfurization

IT Diesel fuel
 Jet aircraft fuel
 (desulfurization of; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Gasoline
 RL: PUR (Purification or recovery); PREP (Preparation)
 (desulfurization of; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Petroleum refining
 (desulfurization; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Petroleum refining
 (extn.-**oxidn.**; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Petroleum products
 (gases, liquefied, desulfurization of; **oxidn.**-extn. removal

- of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
- IT Onium compounds
RL: NUU (Other use, unclassified); USES (Uses)
(imidazolium compds., ionic liq. extn. **solvent; oxidn**. -extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
- IT Phosphonium compounds
Pyridinium compounds
Quaternary ammonium compounds, uses
RL: NUU (Other use, unclassified); USES (Uses)
(ionic liq. extn. **solvent; oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
- IT Air
(**oxidizing** agent; **oxidn.**-extn. removal of organosulfur compds. from **hydrocarbon** fuels by contact with ionic liqs.)
- IT Peroxides, uses
Peroxy acids
RL: NUU (Other use, unclassified); USES (Uses)
(**oxidizing** agent; **oxidn.**-extn. removal of organosulfur compds. from **hydrocarbon** fuels by contact with ionic liqs.)
- IT Ionic liquids
(**oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
- IT Sulfones
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); REM (Removal or disposal); FORM (Formation, nonpreparative); PROC (Process)
(removal of; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
- IT Disulfides
Sulfides, processes
Thiols (organic), processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(removal of; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
- IT 1813-60-1, Tetrabutylphosphonium **tetrafluoroborate** 2932-48-1,
Trimethylphenylammonium **hexafluorophosphate** 12076-71-0,
Trimethylamine tetrachloroaluminate 14791-97-0, Pyridinium
fluorosulfonate 80432-09-3 145022-44-2, 1-Ethyl-3-methylimidazolium triflate 155371-19-0, 1-Ethyl-3-methylimidazolium
hexafluorophosphate 174501-64-5, 1-Butyl-3-methylimidazolium
hexafluorophosphate 174501-65-6, 1-Butyl-3-methylimidazolium
tetrafluoroborate 174645-81-9 174899-66-2,
1-Butyl-3-methylimidazolium **trifluoromethanesulfonate** 186088-50-6, N-Butylpyridinium **hexafluorophosphate**
RL: NUU (Other use, unclassified); USES (Uses)
(ionic liq. extn. **solvent; oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
- IT 7782-44-7, Oxygen, uses 10028-15-6, Ozone, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**oxidizing** agent; **oxidn.**-extn. removal of organosulfur compds. from **hydrocarbon** fuels by contact with

ionic liqs.)

IT 7440-02-0, Nickel, uses 7440-05-3, **Palladium**, uses 7440-06-4, **Platinum**, uses 7440-62-2, Vanadium, uses
 RL: **CAT (Catalyst use); USES (Uses)**
 (**oxidn. catalyst; oxidn.-extn.** removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT 67-71-0, Dimethyl sulfone 95-15-8, Benzothiophene 95-15-8D, Benzothiophene, derivs. 110-02-1D, Thiophene, derivs. 110-66-7, Pentanethiol 132-65-0D, Dibenzothiophene, derivs. 825-44-5, Benzothiophene sulfone 25154-40-9, Methylthiophene
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
 (removal of; **oxidn.-extn.** removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT **7782-44-7, Oxygen**, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**oxidizing agent; oxidn.-extn.** removal of organosulfur compds. from **hydrocarbon** fuels by contact with ionic liqs.)

RN 7782-44-7 HCPLUS
 CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O==O

L41 ANSWER 2 OF 21 HCPLUS COPYRIGHT 2003 ACS
 AN 2003:197057 HCPLUS
 DN 138:187400
 TI Method for oxidation of hydrocarbons to acids, and particularly for the production of adipic acid by oxidation of cyclohexane, cyclohexanol, and/or cyclohexanone, using manganese **catalysts** in the presence of aromatic organic acids
 IN Bonnet, Didier; Fache, Eric; Simonato, Jean Pierre
 PA Rhodia Polyamide Intermediates, Fr.
 SO Fr. Demande, 18 pp.
 CODEN: FRXXBL
 DT Patent
 LA French
 IC ICM C07C051-31
 ICS C07C051-215; C07C055-14
 CC 23-16 (Aliphatic Compounds)
 Section cross-reference(s): 24, 35, 45

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2828194	A1	20030207	FR 2001-10427	20010803
	WO 2003014055	A1	20030220	WO 2002-FR2508	20020715
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,				

CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG

PRAI FR 2001-10427 A 20010803

OS CASREACT 138:187400; MARPAT 138:187400

AB A process is claimed for the oxidn. of satd., (un)substituted, (cyclo)aliph. **hydrocarbons**, or alkylarom. **hydrocarbons**, and/or alcs. or ketones, to give acids or polyacids. The process uses O₂ as the **oxidizing** agent, in a liq. medium, in the presence of a manganese-based **catalyst** and an org. acid solvent component of formula Rn-Ar-CO₂H [I; Ar = arom. radical of 1 or more condensed arom. rings.; n = 1-3; R = CR₁R₂R₃ where R₁, R₂, R₃ = C1-4 alkyl or F]. In comparison to the std. solvent (acetic acid), acids I provide simpler isolation of the acid products, as well as simplified recycling of **catalyst** and other advantages. This added solvent component may also contain addnl. substances, particularly nitriles, hydroxyimides, and halogenated (esp. fluorinated) substances; these can improve the productivity and/or selectivity of the reaction, e.g., by improving the dissoln. of **oxygen**. For example, cyclohexane was **oxidized** by atm. O₂ at 140.degree. and > 125 bar in the presence of Mn(acac)₃ **catalyst**, cyclohexanone, and 4-tert-butylbenzoic acid (II), for approx. 35 min., to give 7.17% transformation of cyclohexane, with the following selectivities to acid products: adipic acid 53.6%, glutaric acid 11.8%, and succinic acid 3.5%. In a similar comparative expt., acid II gave a cyclohexane conversion of 3.64%, vs. 2.32% for 4-CF₃C₆H₄CO₂H, 1.65% for PhCO₂H, and only 0.48% with no arom. acid solvent component.

ST oxidn hydrocarbon manganese **catalyst** arom org acid solvent; adipic acid prodn arom org acid solvent; cyclohexane cyclohexanol cyclohexanone oxidn **oxygen** manganese **catalyst** arom acid; benzoic acid tert butyl **trifluoromethyl solvent** oxidn cyclohexane

IT Hydrocarbons, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(alicyclic, substrate; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Aromatic hydrocarbons, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(alkyl, substrate; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Carboxylic acids, uses

RL: NUU (Other use, unclassified); USES (Uses)
(arom., solvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Perfluoro compounds

RL: NUU (Other use, unclassified); USES (Uses)
(carboxylic acids, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Fluorides, uses

Nitriles, uses

Perfluorocarbons

RL: NUU (Other use, unclassified); USES (Uses)
(cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen**
using manganese **catalysts** and arom. acid solvents, and use in
prodn. of adipic acid from cyclohexane, cyclohexanol, and/or
cyclohexanone)

IT Perfluoro compounds

RL: NUU (Other use, unclassified); USES (Uses)
(esters, cosolvent; **oxidn.** of hydrocarbons to acids by
oxygen using manganese **catalysts** and arom. acid
solvents, and use in prodn. of adipic acid from cyclohexane,
cyclohexanol, and/or cyclohexanone)

IT Aromatic compounds

RL: NUU (Other use, unclassified); USES (Uses)
(fluoro arenes, cosolvent; **oxidn.** of hydrocarbons to acids by
oxygen using manganese **catalysts** and arom. acid
solvents, and use in prodn. of adipic acid from cyclohexane,
cyclohexanol, and/or cyclohexanone)

IT Amines, uses

Carboxylic acids, uses

Hydrocarbons, uses

Ketones, uses

Nitriles, uses

RL: NUU (Other use, unclassified); USES (Uses)
(fluoro, cosolvent; **oxidn.** of hydrocarbons to acids by
oxygen using manganese **catalysts** and arom. acid
solvents, and use in prodn. of adipic acid from cyclohexane,
cyclohexanol, and/or cyclohexanone)

IT Imides

RL: NUU (Other use, unclassified); USES (Uses)
(hydroxy, cosolvent; **oxidn.** of hydrocarbons to acids by
oxygen using manganese **catalysts** and arom. acid
solvents, and use in prodn. of adipic acid from cyclohexane,
cyclohexanol, and/or cyclohexanone)

IT Perfluoro compounds

RL: NUU (Other use, unclassified); USES (Uses)
(ketones, cosolvent; **oxidn.** of hydrocarbons to acids by
oxygen using manganese **catalysts** and arom. acid
solvents, and use in prodn. of adipic acid from cyclohexane,
cyclohexanol, and/or cyclohexanone)

IT Perfluoro compounds

RL: NUU (Other use, unclassified); USES (Uses)
(nitriles, cosolvent; **oxidn.** of hydrocarbons to acids by
oxygen using manganese **catalysts** and arom. acid
solvents, and use in prodn. of adipic acid from cyclohexane,
cyclohexanol, and/or cyclohexanone)

IT Halides

RL: NUU (Other use, unclassified); USES (Uses)
(org., cosolvent; **oxidn.** of hydrocarbons to acids by
oxygen using manganese **catalysts** and arom. acid
solvents, and use in prodn. of adipic acid from cyclohexane,
cyclohexanol, and/or cyclohexanone)

IT Oxidation

Oxidation catalysts

(**oxidn.** of hydrocarbons to acids by **oxygen** using
manganese **catalysts** and arom. acid solvents, and use in
prodn. of adipic acid from cyclohexane, cyclohexanol, and/or
cyclohexanone)

- IT Amines, uses
 - Carboxylic acids, uses
 - Esters, uses
 - Ketones, uses
 - Nitriles, uses
- RL: NUU (Other use, unclassified); USES (Uses)
 - (perfluoro, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)
- IT Carboxylic acids, preparation
 - RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
 - (polycarboxylic, product; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)
- IT Carboxylic acids, preparation
 - RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
 - (product; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)
- IT Alcohols, reactions
 - Hydrocarbons, reactions
 - Ketones, reactions
- RL: RCT (Reactant); RACT (Reactant or reagent)
 - (substrate; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)
- IT 65-85-0, Benzoic acid, uses 65-85-0D, Benzoic acid, derivs. 98-73-7, 4-tert-Butylbenzoic acid 455-24-3, 4-(**Trifluoromethyl**)benzoic acid 725-89-3, 3,5-Bis(**trifluoromethyl**)benzoic acid 1320-04-3, Naphthoic acid 1320-04-3D, Naphthalenecarboxylic acid, derivs. 16225-26-6, 3,5-Di-tert-butylbenzoic acid
 - RL: NUU (Other use, unclassified); USES (Uses)
 - (acid **solvent**; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)
- IT 7440-45-1, Cerium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses
 - RL: CAT (**Catalyst use**); USES (Uses)
 - (**catalyst** dopant; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)
- IT 7439-96-5, Manganese, uses 14284-89-0, Manganese tris(acetylacetone)
 - RL: CAT (**Catalyst use**); USES (Uses)
 - (**catalyst**; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)
- IT 75-05-8, Acetonitrile, uses 98-08-8, .alpha.,.alpha.,.alpha.-Trifluorotoluene 100-47-0, Benzonitrile, uses 306-94-5,

Perfluorodecalin 307-24-4, Perfluorohexanoic acid 307-34-6,
Perfluoroctane 311-89-7, Perfluorotributylamine 335-57-9,
Perfluoroheptane 335-67-1, Perfluoroctanoic acid 335-67-1D,
Perfluoroctanoic acid, alkyl esters 336-08-3, Perfluoroadipic acid
338-83-0, Perfluorotripropylamine 338-84-1, Perfluorotripentylamine
353-85-5, Perfluoroacetonitrile 355-02-2, Perfluoromethylcyclohexane
355-42-0, Perfluorohexane 375-85-9, Perfluoroheptanoic acid
375-95-1, Perfluorononanoic acid 375-95-1D, Perfluorononanoic acid,
alkyl esters 375-96-2, Perfluorononane 402-31-3, 1,3-
Bis(trifluoromethyl)benzene 423-55-2, Perfluoroctyl bromide 434-64-0,
Perfluorotoluene 507-63-1, Perfluoroctyl iodide 524-38-9,
N-Hydroxypthalimide 602-94-8, Pentafluorobenzoic acid 647-28-9,
Perfluoroctanol 684-16-2, Perfluoroacetone 920-66-1,
1,1,1,3,3-Hexafluoro-2-propanol 2378-02-1, Perfluoro-tert-butanol
6066-82-6, N-Hydroxysuccinimide 7057-81-0, Perfluorohexanol
24427-67-6, Perfluoroisopropanol 51294-16-7, Perfluoromethyldecalin
71990-01-7, (Trifluoromethyl)benzoic acid 85758-71-0, Perfluorodecanol
85758-72-1, Perfluorononanol

RL: NUU (Other use, unclassified); USES (Uses)

(cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen**
using manganese **catalysts** and arom. acid solvents, and use in
prodn. of adipic acid from cyclohexane, cyclohexanol, and/or
cyclohexanone)

IT 110-15-6P, Succinic acid, preparation 110-94-1P, Glutaric acid
124-04-9P, Adipic acid, preparation 693-23-2P, Dodecanedioic acid
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP
(Preparation)

(product; **oxidn.** of hydrocarbons to acids by **oxygen**
using manganese **catalysts** and arom. acid solvents, and use in
prodn. of adipic acid from cyclohexane, cyclohexanol, and/or
cyclohexanone)

IT 108-93-0, Cyclohexanol, reactions 108-94-1, Cyclohexanone, reactions
110-82-7, Cyclohexane, reactions 294-62-2, Cyclododecane

RL: RCT (Reactant); RACT (Reactant or reagent)
(substrate; **oxidn.** of hydrocarbons to acids by **oxygen**
using manganese **catalysts** and arom. acid solvents, and use in
prodn. of adipic acid from cyclohexane, cyclohexanol, and/or
cyclohexanone)

IT 307-34-6, Perfluoroctane 335-57-9, Perfluoroheptane
355-42-0, Perfluorohexane

RL: NUU (Other use, unclassified); USES (Uses)
(cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen**
using manganese **catalysts** and arom. acid solvents, and use in
prodn. of adipic acid from cyclohexane, cyclohexanol, and/or
cyclohexanone)

RN 307-34-6 HCAPLUS

CN Octane, octadecafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

F₃C- (CF₂)₆-CF₃

RN 335-57-9 HCAPLUS

CN Heptane, hexadecafluoro- (6CI, 8CI, 9CI) (CA INDEX NAME)

F₃C- (CF₂)₅-CF₃

RN 355-42-0 HCAPLUS
 CN Hexane, tetradecafluoro- (6CI, 8CI, 9CI) (CA INDEX NAME)

F₃C—(CF₂)₄—CF₃

L41 ANSWER 3 OF 21 HCAPLUS COPYRIGHT 2003 ACS
 AN 2002:609875 HCAPLUS
 DN 137:156831
 TI Composite Pd catalyst-based membrane system for production of hydrogen peroxide by direct oxidation of hydrogen without formation of explosive H₂-O₂ mixtures
 IN Choudhary, Vasant Ramchandra; Sansare, Subhash Dwarkanath; Gaikwad, Abaji Govind
 PA Council of Scientific & Industrial Research, India
 SO U.S., 13 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 IC ICM C01B015-01
 NCL 423584000
 CC 49-8 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 38, 57
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 6432376	B1	20020813	US 2000-655970	20000905
PRAI US 2000-655970		20000905		

AB Hydrogen peroxide manuf. by direct oxidn. of hydrogen with oxygen, without the formation of explosive H₂-O₂ mixts., is carried out using a tubular hydrophobic composite Pd-membrane catalyst system. The catalytic system is represented by the general formula: HPM/SOMF/MxPd_{1-x}/IPM, in which: (1) HPM is a hydrophobic polymer membrane permeable to H₂, O₂, water vapor, and H₂O₂ vapor but impermeable to liq. water or aq. soln.; (2) SOMF is a surface-oxidized metal film comprising Pd, which is permeable only to H₂, deposited on a metal alloy, M_xPd_{1-x} (M = Cu, Ag, Au, noble metals (other than Pd), x = 0.03-0.6), and (3) IPM is an inorg. porous membrane, typically a ceramic, which is permeable to all gases and vapors. The ceramic membrane (typically α -Al₂O₃ or ZrO₂) is in the form of a tube, with thickness of \geq 0.5 mm and internal diam. of \geq 0.6 cm; the wt. of metal alloy per unit area of the ceramic membrane is 5.0-500 g/m²; the thickness of the surface-oxidized metal film is 0.05-5.0 μ m; and the wt. of the hydrophobic polymer membrane per unit area of the surface-oxidized metal film is 0.2-40 g/m². A method was also described for the fabrication, pretreatment, and stabilization of the catalytic membrane unit, as well as the conditions for carrying out the direct oxidn. of H₂ to hydrogen peroxide.

ST hydrogen peroxide manuf hydrogen oxidn catalyst membrane; hydrophobic polymer ceramic catalyst membrane hydrogen peroxide manuf; palladium alloy membrane hydrogen peroxide manuf hydrogen oxidn

IT Silicone rubber, uses
 RL: DEV (Device component use); USES (Uses)
 (di-Me, trimethylolpropane-crosslinked, hydrophobic membrane side;

- composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT Coating process
(electroless, in deposition of Pd alloys; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT **Fluoropolymers**, uses
Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(hydrophobic membrane side; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT **Oxidation catalysts**
(membrane; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT **Oxidation**
(surface, of metal films; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT Ceramic membranes
(tubular; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT **Palladium alloy**, base
RL: **CAT (Catalyst use)**; DEV (Device component use); USES (Uses)
(catalytic membrane system contg.; composite **Pd** catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT 1314-08-5, **Palladium oxide (PdO)** 7440-05-3, **Palladium**, uses 11122-08-0 12726-60-2, **Palladium alloy, Pd, Ag** 133422-42-1 134941-08-5 446030-94-0 446030-95-1
RL: **CAT (Catalyst use)**; DEV (Device component use); USES (Uses)
(catalytic membrane system contg.; composite **Pd** catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses
RL: DEV (Device component use); USES (Uses)
(ceramic membrane; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT 24937-79-9, Polyvinylidene difluoride
RL: DEV (Device component use); USES (Uses)
(hydrophobic membrane side; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT 7722-84-1P, Hydrogen peroxide, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(manuf. of; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn.** of hydrogen without formation of explosive H₂-O₂ mixts.)
- IT 7601-90-3, Perchloric acid, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)

(membrane catalyst system pretreated with; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn** of hydrogen without formation of explosive H₂-O₂ mixts.)

IT 1429-50-1, Ethylenediamine tetramethylenephosphonic acid 2809-21-4, 1-Hydroxyethylidene-1,1-diphosphonic acid 6419-19-8, Phosphonic acid, [nitrilotris(methylene)]tris- 7722-88-5, Sodium pyrophosphate 22036-77-7
 RL: NUU (Other use, unclassified); USES (Uses)
 (stabilizer, for hydrogen peroxide; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn** of hydrogen without formation of explosive H₂-O₂ mixts.)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; JP 1133909 1989
- (2) Anon; EP 0504741 A1 1992 HCPLUS
- (3) Anon; DE 4127918 A1 1992 HCPLUS
- (4) Anon; WO 9314025 1993 HCPLUS
- (5) Anon; EP 0621235 A1 1994 HCPLUS
- (6) Anon; WO 9412428 1994 HCPLUS
- (7) Fu, L; Stud Surf Sci Catal 1992, V72, P33 HCPLUS
- (8) Gosser; US 4832938 A 1989 HCPLUS
- (9) Kawakami; US 5399334 A 1995 HCPLUS
- (10) Luckoff; US 5505921 A 1996 HCPLUS
- (11) Maraschino; US 5169618 A 1992 HCPLUS
- (12) Sun; US 4393038 A 1983 HCPLUS
- (13) Umiya, S; Journal of Membrane Science 1991, V56, P303

L41 ANSWER 4 OF 21 HCPLUS COPYRIGHT 2003 ACS

AN 2002:514249 HCPLUS

DN 137:63022

TI Preparation of 2-butanone and 2-butanol from n-butane

IN Omori, Hideki; Haba, Kazuhiko

PA Maruzen Oil Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C07C027-12

ICS C07C031-12; C07C049-04; C07B061-00

CC 23-15 (Aliphatic Compounds)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002193856	A2	20020710	JP 2000-390667	20001222
	GB 2382075	A1	20030521	GB 2001-29467	20011207
	US 2002123654	A1	20020905	US 2001-12318	20011212
	US 6479707	B2	20021112		

PRAI JP 2000-390667 A 20001222

OS CASREACT 137:63022

AB 2-Butanone (I) and 2-butanol (II) are prep'd. by oxidn. of n-butane (III) by mol. O in the presence of transition metal-contg. Al phosphates. III was **oxidized** using a V Al P Si oxide **catalyst** at 100.degree. under 4 MPa for 24 h to give I and II with 52.3% selectivity at 7.9% conversion.

ST butanone butanol prep'n butane oxidn **catalyst**; transition metal aluminum phosphate **catalyst** oxidn butane; vanadium aluminum phosphate **catalyst** oxidn butane

IT Hydrocarbons, reactions

RL: RGT (Reagent); RACT (Reactant or reagent)
(fluoro, selectivity modifiers; prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT **Oxidation catalysts**
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT 209048-56-6P, Aluminum cobalt phosphorus oxide 439286-75-6P
439286-76-7P, Aluminum cobalt phosphorus silicon oxide 439286-77-8P
439286-78-9P, Aluminum copper phosphorus silicon oxide

RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT 78-92-2P, 2-Butanol 78-93-3P, 2-Butanone, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT 106-97-8, n-Butane, reactions **7782-44-7, Oxygen, reactions**
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT 110-86-1, Pyridine, reactions **307-34-6, Perfluorooctane**
7722-84-1, Hydrogen peroxide, reactions 7732-18-5, Water, reactions
RL: RGT (Reagent); RACT (Reactant or reagent)
(selectivity modifier; prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT **7782-44-7, Oxygen, reactions**
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

RN 7782-44-7 HCPLUS
CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O—O

IT **307-34-6, Perfluorooctane**
RL: RGT (Reagent); RACT (Reactant or reagent)
(selectivity modifier; prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

RN 307-34-6 HCPLUS
CN Octane, octadecafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

F₃C—(CF₂)₆—CF₃

L41 ANSWER 5 OF 21 HCPLUS COPYRIGHT 2003 ACS
AN 2001:693212 HCPLUS
DN 135:244563
TI Preparation of an aqueous **solution** of hydrogen peroxide from hydrogen and **oxygen**
IN Devic, Michel
PA Atofina, Fr.

SO PCT Int. Appl., 29 pp.
 CODEN: PIXXD2
 DT Patent
 LA French
 IC ICM C01B015-029
 ICS B01J008-20; B01J008-22; B01J008-00; B01J019-24; B01J008-06;
 C01B015-013
 CC 49-8 (Industrial Inorganic Chemicals)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001068519	A1	20010920	WO 2001-FR449	20010215
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	FR 2806399	A1	20010921	FR 2000-3438	20000317
	FR 2806399	B1	20020913		
	EP 1263680	A1	20021211	EP 2001-907809	20010215
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	US 2003086853	A1	20030508	US 2002-221339	20020910
PRAI	FR 2000-3438	A	20000317		
	WO 2001-FR449	W	20010215		
OS	MARPAT 135:244563				
AB	An aq. soln. of hydrogen peroxide is prep'd. by injection of hydrogen and oxygen into an aq. acidic soln. in the presence of a dispersed catalyst and a tenside. The tenside stable under acidic and oxidizing conditions has the following general formula: $C_nF_{2n+1}-Q-G$ or $C_nF_{2n+1}-G$ with Q being a spacer and G a hydrophilic group. The concn. of the tenside in the reaction mixt. is 5-10 ppm to avoid foaming. An alk. metal bromide or hydrobromic acid (20-100 ppm) and bromine (2-10 ppm) are added to inhibit decompr. of the hydrogen peroxide. The catalyst consists of metals, such as palladium, platinum, ruthenium, rhodium, iridium, osmium, holmium or gold, preferably of palladium as the main component and platinum as the minor component. The bimetallic catalyst is supported on silica. The catalyst is prep'd. by mixing the silica with a conc. soln. of the metal salts forming a paste, filtration and drying of the filtrate under conditions supporting slow crystn., redn. with hydrogen at 200-400 .degree.C, treatment of the solid with an acidic soln. ($pH = 1-3$) contg. bromide (20-100 mg/l) and bromine (2-20 mg/l) at 10-80 .degree.C, and subsequent filtration and drying at 100-140 .degree.C. The reaction for the prodn. of H_2O_2 is carried out in a stirred or tubular reactor at 30-60 .degree.C and 10-100 bars with a molar hydrogen/oxygen ratio < 0.0416. The aq. soln. is sepd. from the catalyst and additives by inverse osmosis using a polyamide membrane.				
ST	hydrogen peroxide prepn oxygen hydrogen; catalyst palladium platinum hydrogen peroxide prepn; surfactant stabilizer bromide bromine hydrogen peroxide prepn				

- IT Carboxylic acids, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(**fluoro**, surfactant; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT Surfactants
(**fluorosurfactants**; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT Oxidation
(partial, reactors, tubular and stirred tank; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT Oxidation catalysts
(partial; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT Reverse osmosis
(prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT Alkali metal bromides
RL: NUU (Other use, unclassified); USES (Uses)
(stabilizer; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT Fatty acids, uses
Sulfonic acids, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(surfactant, fluorinated; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT 7722-84-1P, Hydrogen peroxide, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(aq. **soln.** of; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT 7631-86-9, Silica, uses
RL: CAT (Catalyst use); NUU (Other use, unclassified); USES (Uses)
(catalyst support; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT 7439-88-5, Iridium, uses 7440-04-2, Osmium, uses
7440-05-3, Palladium, uses 7440-06-4, Platinum, uses
7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses
7440-57-5, Gold, uses 7440-60-0, Holmium, uses
RL: CAT (Catalyst use); USES (Uses)
(prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT 7664-38-2, Phosphoric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT 1333-74-0, Hydrogen, reactions 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
- IT 7726-95-6, Bromine, uses 10035-10-6, Hydrobromic acid, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(stabilizer; prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Atochem Elf Sa; FR 2774674 A 1999 HCPLUS
- (2) Ausimont Spa; EP 0930269 A 1999 HCPLUS
- (3) Du Pont; WO 9204277 A 1992 HCPLUS
- (4) Fu, L; STUDIES IN SURFACE SCIENCE AND CATALYSIS 1992, V72, P33 HCPLUS
- (5) Gosser, L; US 4772458 A 1988 HCPLUS
- (6) Mitsubishi Gas Chemical Co; EP 0498166 A 1992 HCPLUS
- (7) Princeton Advanced Technology; WO 9605138 A 1996 HCPLUS

IT 7782-44-7, Oxygen, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of an aq. soln. of hydrogen peroxide from hydrogen
 and oxygen)

RN 7782-44-7 HCPLUS

CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O=O

L41 ANSWER 6 OF 21 HCPLUS COPYRIGHT 2003 ACS
 AN 2001:676736 HCPLUS

DN 135:227378

TI Method and **fluoroorganic solvents** for
oxidizing hydrocarbons into carboxylic acids

IN Fache, Eric

PA Rhodia Polyamide Intermediates, Fr.

SO PCT Int. Appl., 19 pp.

CODEN: PIXXD2

DT Patent

LA French

IC ICM C07C051-31

ICS C07C055-14; C07C055-21

CC 35-2 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 23, 48

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001066506	A1	20010913	WO 2001-FR685	20010307
	W: BR, BY, CA, CN, CZ, ID, IN, JP, KR, PL, RO, RU, SG, SK, UA, US, VN RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	FR 2806078	A1	20010914	FR 2000-2995	20000308
	EP 1265836	A1	20021218	EP 2001-913954	20010307
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				

PRAI FR 2000-2995 A 20000308
 WO 2001-FR685 W 20010307

AB **Hydrocarbons**, in particular satd. aliph. **hydrocarbons**, whether or not branched, cycloaliph., or alkylarom. **hydrocarbons**, are **oxidized** into carboxylic acid or polyacids. The oxidn. of cyclohexane into adipic acid with an **oxidizing** agent contg. mol. **oxygen** (e.g., air), in the presence of a fluorinated compd. solvent (e.g., PhCF₃), enables easier sepn. and recycling of the unreacted cyclohexane from the oxidn. intermediates.

ST cyclohexane oxidn adipic acid manuf; hydrocarbon oxidn carboxylic acid manuf

- IT Aromatic hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkyl; method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids)
- IT Carboxylic acids, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(dicarboxylic; method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids)
- IT Aromatic compounds
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro arenes, solvents; method and
fluoroorg. solvents for oxidizing
hydrocarbons into carboxylic acids using)
- IT Alcohols, uses
Carboxylic acids, uses
Hydrocarbons, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro, solvents; method and fluoroorg.
solvents for oxidizing hydrocarbons into
carboxylic acids using)
- IT Esters, uses
Nitriles, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro-, solvents; method and fluoroorg.
solvents for oxidizing hydrocarbons into
carboxylic acids using)
- IT Ethers, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoroalkyl, solvents; method and
fluoroorg. solvents for oxidizing
hydrocarbons into carboxylic acids using)
- IT Phase separation
(liq.-liq.; method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids using)
- IT Oxidation
(liq.-phase; method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids)
- IT Oxidation catalysts
(liq.-phase; method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids using)
- IT Carboxylic acids, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids)
- IT Cycloalkanes
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids)
- IT Hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids)
- IT Air
Crystallization
(method and fluoroorg. solvents for
oxidizing hydrocarbons into carboxylic acids using)
- IT 124-04-9P, Adipic acid, preparation 693-23-2P, 1,12-Dodecanedioic acid
RL: IMF (Industrial manufacture); PREP (Preparation)

(method and **fluoroorg. solvents** for
oxidizing hydrocarbons into carboxylic acids)

IT 21679-46-9, Cobalt trisacetylacetone
 RL: **CAT (Catalyst use); USES (Uses)**
 (method and **fluoroorg. solvents** for
oxidizing hydrocarbons into carboxylic acids using)

IT 110-82-7, Cyclohexane, reactions 294-62-2, Cyclododecane
7782-44-7, Oxygen, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (method and **fluoroorg. solvents** for
oxidizing hydrocarbons into carboxylic acids using)

IT 7732-18-5, Water, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**solvent; method and fluoroorg. solvents**
 for **oxidizing hydrocarbons** into carboxylic acids)

IT 98-08-8, Benzotrifluoride 375-85-9, **Perfluorohexanoic acid**
 RL: **CAT (Catalyst use); USES (Uses)**
 (**solvent; method and fluoroorg. solvents**
 for **oxidizing hydrocarbons** into carboxylic acids
 using)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Costantini, M; US 5756837 A 1998 HCPLUS
- (2) Costantini, M; US 6147256 A 2000 HCPLUS
- (3) Dassel, M; WO 0046172 A 2000 HCPLUS
- (4) Kuhlmann, G; US 3947494 A 1976 HCPLUS
- (5) Nkk; JP 05286891 A 1993 HCPLUS
- (6) Rhone Poulenc Chimie; FR 2732678 A 1996 HCPLUS

IT **7782-44-7, Oxygen, reactions**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (method and **fluoroorg. solvents** for
oxidizing hydrocarbons into carboxylic acids using)

RN 7782-44-7 HCPLUS

CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O==O

L41 ANSWER 7 OF 21 WPIX (C) 2003 THOMSON DERWENT
 AN 2000-543466 [49] WPIX
 DNC C2000-161721
 TI Oxidation of **hydrocarbons** for making dibasic acids, comprises
oxidizing the **hydrocarbon** in the presence of a
 fluorocompound.

DC A28 A32 A41 E19 F01
 IN DASSEL, M W; DECOSTER, D C; VASSILIOU, E
 PA (RPCR-N) RPC INC
 CYC 91
 PI WO 2000046172 A1 20000810 (200049)* EN 49p C07C051-31
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
 OA PT SD SE SL SZ TZ UG ZW
 W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
 FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS
 LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
 TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
 AU 2000036974 A 20000825 (200059) C07C051-31

EP 1150938 A1 20011107 (200168) EN C07C051-31
 R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
 RO SE SI
 BR 2000008034 A 20011106 (200175) C07C051-31
 KR 2001101783 A 20011114 (200230) C07C051-31
 CN 1339021 A 20020306 (200236) C07C051-31
 JP 2002536350 W 20021029 (200274) 71p C07C051-215
 ADT WO 2000046172 A1 WO 2000-US3109 20000204; AU 2000036974 A AU 2000-36974
 20000204; EP 1150938 A1 EP 2000-915753 20000204, WO 2000-US3109 20000204;
 BR 2000008034 A BR 2000-8034 20000204, WO 2000-US3109 20000204; KR
 2001101783 A KR 2001-709904 20010804; CN 1339021 A CN 2000-803252
 20000204; JP 2002536350 W JP 2000-597245 20000204, WO 2000-US3109 20000204
 FDT AU 2000036974 A Based on WO 200046172; EP 1150938 A1 Based on WO
 200046172; BR 2000008034 A Based on WO 200046172; JP 2002536350 W Based on
 WO 200046172
 PRAI US 1999-118652P 19990204
 IC ICM C07C051-215; C07C051-31
 ICS C07C055-14; C07C063-15
 ICA C07B061-00
 AB WO 200046172 A UPAB: 20001006
 NOVELTY - Intermediate oxidation products are prepared by
 oxidizing cyclohexane or o-, m- and/or p-xylene under controlled
 conditions in the presence of a small critical amount of
fluorocompound co-solvent.
 DETAILED DESCRIPTION - A hydrocarbon such as cyclohexane or
 o-, m- and/or p-xylene is oxidized to a respective acid by
 adding a fluorocompound to a reaction mixture containing a solvent and a
 cobalt catalyst.
 USE - For making intermediate oxidation products especially dibasic
 acids.
 ADVANTAGE - The fluorocompound increases the reaction rate without
 changing the relative oxygen consumption (claimed) and without
 sacrificing the yield, the selectivity and/or the control of the reaction.
 Dwg.0/6
 FS CPI
 FA AB; DCN
 MC CPI: A01-E11; A01-E12; E10-C02C1; E10-C02D2; E10-C04F; F01-D03; F01-D04;
 F01-D10
 L41 ANSWER 8 OF 21 WPIX (C) 2003 THOMSON DERWENT
 AN 2000-387757 [33] WPIX
 CR 2001-244975 [25]
 DNC C2000-117762
 TI **Catalytic** dewaxing of hydrocarbon feed for the manufacture of
 lubricating base oils involves contacting the feed with a **catalyst**
 comprising metallosilicate crystallites, binder and a hydrogenation
 component.
 DC H04
 IN CREYGHTON, E J; CRIJNEN-VAN BEERS, M B H; DARNANVILLE, J; DUPREY, E; HUVE,
 L G; MESTERS, C M A M; REMANS, T J; VAN BALLEGOY, C M; BALLEGOY, C M;
 DIPREY, E
 PA (SHEL) SHELL INT RES MIJ BV
 CYC 91
 PI WO 2000029511 A1 20000525 (200033)* EN 40p C10G045-64
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
 OA PT SD SE SL SZ TZ UG ZW
 W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES
 FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS

LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
 TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

AU 2000018594 A	20000605 (200042)	C10G045-64
EP 1137741	A1 20011004 (200158) EN	C10G045-64
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE		
CN 1330699 A	20020109 (200229)	C10G045-64
HU 2001004314 A2	20020328 (200234)	C10G045-64
ZA 2001003926 A	20020925 (200275)	26p B01J000-00
JP 2002530470 W	20020917 (200276)	40p C10G045-60
KR 2002040821 A	20020530 (200276)	B01J037-00
AU 754266 B	20021107 (200302)	C10G045-64
ZA 2002002368 A	20021224 (200309)	23p B01J000-00
ADT	WO 2000029511 A1 WO 1999-EP9024 19991112; AU 2000018594 A AU 2000-18594 19991112; EP 1137741 A1 EP 1999-962151 19991112, WO 1999-EP9024 19991112; CN 1330699 A CN 1999-814636 19991112; HU 2001004314 A2 WO 1999-EP9024 19991112, HU 2001-4314 19991112; ZA 2001003926 A ZA 2001-3926 20010515; JP 2002530470 W WO 1999-EP9024 19991112, JP 2000-582498 19991112; KR 2002040821 A KR 2002-703951 20020327; AU 754266 B AU 2000-18594 19991112; ZA 2002002368 A ZA 2002-2368 20020325	
FDT	AU 2000018594 A Based on WO 200029511; EP 1137741 A1 Based on WO 200029511; HU 2001004314 A2 Based on WO 200029511; JP 2002530470 W Based on WO 200029511; AU 754266 B Previous Publ. AU 200018594, Based on WO 200029511	
PRAI	EP 1999-402401 19990927; EP 1998-402839 19981116	
IC	ICM B01J000-00; B01J037-00; C10G045-60; C10G045-64	
	ICS B01J029-06; B01J029-44; B01J029-74; B01J037-18; C01B039-38; C01B039-42; C07C000-00; C10G045-62; C10G073-02	
AB	WO 200029511 A UPAB: 20030206 NOVELTY - Catalytic dewaxing of hydrocarbon feed comprising waxy molecules involves contacting the feed with a catalyst comprising metallocilicate crystallites, binder and hydrogenation component. The weight ratio of the metallocilicate crystallites and the binder is 5:95-35:65.	
	DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for (A) a process of preparing the catalyst composition by (a) preparing an extrudable mass of a homogenous mixture of metallocilicate crystallites, water, a source of low acidity refractory oxide binder as a mixture of powder and a sol, (b) extruding (a), (c) drying the extrudate from (b), and (d) calcining the dried extrudate; (B) a catalyst composition comprising at least a low acidity refractory oxide binder which is free of aluminum, metallocilicate crystallites and hydrogenation component; and (C) the use of the catalyst in a hydroconversion process.	
	USE - Used for the manufacture of lubricating base oils.	
	ADVANTAGE - The process provides high yield of base oil product at the same weight hourly space velocity (WHSV). Gas by-product formed in the process is lesser compared to solvent dewaxing process. The catalyst used is cheaper than the prior art.	
	Dwg.0/0	
FS	CPI	
FA	AB	
MC	CPI: H04-E; H04-F02E	
L41	ANSWER 9 OF 21 HCPLUS COPYRIGHT 2003 ACS	
AN	1999:802796 HCPLUS	
DN	132:51439	
TI	Method for oxidation of organic compounds using organic imide catalysts	

IN Hirai, Shigehisa
 PA Daicel Chemical Industries, Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C07B033-00
 ICS B01J031-02; B01J031-04; C07B041-00
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11349493	A2	19991221	JP 1998-170590	19980602
PRAI	JP 1998-170590		19980602		
OS	MARPAT 132:51439				

AB The oxidn. is done with mol. O by using org. imide **catalysts** and a metal compd. at 10-85.degree. in an org. solvent where the metal compd. is used at 0-0.28 mol% based on the substrate. **Oxidizable** substrates are (a) compds. bearing C-H bond on position adjacent to a double bond, (b) methine carbon-contg. compds., (c) nonarom. cyclic **hydrocarbon**, (d) nonarom. alicyclic compds. bearing C-H bond on position adjacent to hetero atom, (e) conjugated compds., (f) alc. or thiols, (g) ethers or thio ethers, (h) aldehydes or thio aldehydes, (i) amines and (j) arom. compds. Thus, heating cyclohexane 50 with N-hydroxyphthalimide (I) 9.69, Co(II) acetate tetrahydrate 0.296, and CH3CN 400 g under a N pressure of 33 kg/cm² while mixing to 75.degree., displacing N with air under a pressure of 40 kg/cm² and N hour space ratio 40, after treating for 4 h, displacing with N and cooling gave a mixt. contg. cyclohexanone (yield 14.1, selectivity 74.5%), cyclohexanol (yield 1.1%, selectivity 6%) and adipic acid (yield 1.85, selectivity 9.4%) and remained I 93.7%.

ST org mol oxygenation **catalyst** hydroxyphthalimide; oxidn **oxygen** mol phthalimide **catalyst** org substrate; hydrocarbon mol **oxygen** oxidn **catalyst** imide; alicyclic mol **oxygen** oxidn **catalyst** imide; alc mol **oxygen** oxidn **catalyst** imide; thio alc mol **oxygen** oxidn **catalyst** imide

IT Hydrocarbons, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
 (alicyclic, substrates; method for **oxidn.** of org. compds.
 using org. imide **catalysts**)

IT Hydrocarbons, uses

RL: NUU (Other use, unclassified); USES (Uses)
 (halo, solvents; method for **oxidn.** of org. compds. using org.
 imide **catalysts**)

IT Oxidation

Oxidation catalysts
 (method for **oxidn.** of org. compds. using org. imide
catalysts)

IT Solvents

(org.; method for **oxidn.** of org. compds. using org. imide
catalysts)

IT Imides

RL: CAT (**Catalyst use**); USES (Uses)
 (**oxidn. catalysts**; method for **oxidn.** of
 org. compds. using org. imide **catalysts**)

IT Metals, uses

RL: CAT (**Catalyst use**); USES (Uses)

- (**oxidn. co-catalysts; method for oxidn.**
of org. compds. using org. imide catalysts)
- IT Amides, uses
 Carboxylic acids, uses
 Esters, uses
 Hydrocarbons, uses
 Nitro compounds
 Thiols (organic), uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvents; method for **oxidn.** of org. compds. using org. imide catalysts)
- IT Aldehydes, reactions
 Amines, reactions
 Aromatic hydrocarbons, reactions
 Ethers, reactions
 Thioethers
 Unsaturated compounds
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substrates; method for **oxidn.** of org. compds. using org. imide catalysts)
- IT Aldehydes, reactions
 Aldehydes, reactions
 Thiocarbonyl compounds
 Thiocarbonyl compounds
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (thioaldehydes, substrates; method for **oxidn.** of org. compds. using org. imide catalysts)
- IT 108-93-0P, Cyclohexanol, preparation 124-04-9P, Hexanedioic acid, preparation 700-58-3P, 2-Adamantanone 5001-18-3P, 1,3-Adamantanediol 34352-74-4P, 4-(1-Hydroxy-1-methylethyl)biphenyl 38638-39-0P, Isopropenylbiphenyl
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (byproducts; method for **oxidn.** of org. compds. using org. imide catalysts)
- IT 1314-62-1, Vanadium oxide, uses 6147-53-1, Cobalt(II) acetate tetrahydrate 6156-78-1, Manganese(II) acetate tetrahydrate 13476-99-8 15077-39-1, Cobalt(II)acetylacetone dihydrate
 RL: CAT (Catalyst use); USES (Uses)
 (co-catalysts; method for **oxidn.** of org. compds. using org. imide catalysts)
- IT 524-38-9, N-Hydroxyphthalimide
 RL: CAT (Catalyst use); USES (Uses)
 (**oxidn. catalysts;** method for **oxidn.** of org. compds. using org. imide catalysts)
- IT 92-91-1P, 4-Acetylbenzylphenyl 108-94-1P, Cyclohexanone, preparation 768-95-6P, Tricyclo[3.3.1.13,7]decan-1-ol
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (products; method for **oxidn.** of org. compds. using org. imide catalysts)
- IT 64-19-7, Acetic acid, uses 75-05-8, Acetonitrile, uses 98-08-8, **Trifluoromethylbenzene** 100-47-0, Benzonitrile, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvents; method for **oxidn.** of org. compds. using org. imide catalysts)
- IT 110-82-7, Cyclohexane, reactions 281-23-2, Adamantane 25640-78-2, Isopropylbiphenyl
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (substrate; method for **oxidn.** of org. compds. using org.

imide catalysts)

L41 ANSWER 10 OF 21 WPIX (C) 2003 THOMSON DERWENT
 AN 1999-580283 [49] WPIX
 DNC C1999-168775

TI Preparation of **catalysts** for oxidation of alcohols, e.g. steroids, allylic alcohols, rethynol, terpens and carbohydrates, e.g. sodium methylapproximately-D-glucopyranoside uranate.

DC A60 A97 E17 E19 J04

IN AVNIR, D; BLUM, J; DEGANELLO, G; PAGLIARO, M

PA (CNDR) CONSIGLIO NAZ DELLE RICERCHE; (YISS) YISSUM RES & DEV CO; (CHTE-N) IST DI CHIM & TECHNOLOGIA DEI PROD NATUR; (YISS) YISSUM RES DEV CO HEBREW UNIV JERUSALEM

CYC 86

PI WO 9947258 A1 19990923 (199949)* EN 29p B01J031-02
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW
 W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW
 AU 9934420 A 19991011 (200008)
 IT 1299146 B 20000229 (200201) B01J021-00

ADT WO 9947258 A1 WO 1999-IT63 19990318; AU 9934420 A AU 1999-34420 19990318;
 IT 1299146 B IT 1998-RM172 19980318

FDT AU 9934420 A Based on WO 9947258

PRAI IT 1998-RM172 19980318

IC ICM B01J021-00; B01J031-02
 ICS B01J037-03; C07B033-00; C07C051-235

AB WO 9947258 A UPAB: 19991124
 NOVELTY - A process for the preparation of **catalysts** for oxidation of alcohols, by entrapment of stable nitroxyl radicals in sol-gel glassy matrices, comprising:
 (a) preparing a polymerizing mixture containing a monomer, water and an alcohol which promotes the mixing of the monomer and the water;
 (b) adding 2,2,6,6-piperidin-1-oxyl (TEMPO), precursors or derivatives;
 (c) adding water to the the mixture; and
 (d) hydrolyzing and polycondensing the monomers to obtain a gel.
 DETAILED DESCRIPTION - The monomer is of formula (I):
 $M(R)_n-(P)^m$ (I)
 M = a semi-metallic or a metal element;
 R = a hydrolyzable substituent; n = 1-6;
 P = a non-polymerizable substituent;
 m = 0-6
 Also claimed is a process for the preparation of reactive solgel materials by the entrapment of stable nitroxyl radicals, comprising:
 (a) polymerizing at least 1 monomer of formula (I) (a metal- or semi-metal alkoxide, metal ester or semi-metal ester), in the presence of stable di-tertiary-alkyl nitroxyl radicals (or precursors) of formula (II), to form a gel at room temperature, containing the trapped dopant;
 (b) drying under low pressure (under 70 mmHg, preferably 15 mmHg);
 (c) liophilisation to yield an areogel powder;
 (d) mild heat treatment (less than 100 deg. C, preferably at 45 deg. C) at atmospheric pressure to form a porous xerogel, coating of the gel on a mesoporous inorganic oxide (e.g. pumice stones); and
 (e) solvent removal at low pressure (preferably 15 mmHg);
 A = 2-3 atom chain, preferably carbon atoms (methylene groups) or a

combination of 1-2C with oxygen or nitrogen

USE - The catalysts are useful for oxidation of primary and secondary alcohols (e.g. steroids, allylic alcohols, rethynol, terpens and carbohydrates) to produce carboxylic acids, ketones and aldehydes (claimed). The catalysts are especially useful in the carbohydrate industry, e.g. for preparation of sodium methyl gamma-D-glucopyranoside uranate by oxidation of methyl gamma-D-glucopyranoside (in examples). Nitroxyl radicals are used for regioselective oxidation of prim. alcohols of soluble polymeric carbohydrates, e.g. starch, inulin and pullulan and, e.g. for high yield (91%) oxidation of E-retinol to E-retinal.

ADVANTAGE - The new catalysts are efficient, recyclable (e.g., after simple filtration and washing with water), and none of the doped catalyst leaches out during use. The doped porous glasses allow the entrapped molecules to retain their physical and chemical properties and permit accessibility to external reagents through the pore network. The inorganic matrix is chemically and thermally inert; has a high surface area; and the entrapped molecules show enhanced stability, by contrast with organic polymer supports. Nitroxyl radicals are costly and moderately toxic, so their entrapment is advantageous for ease of recovery and recycling.

Dwg. 0/0

FS CPI
 FA AB; GI; DCN
 MC CPI: A02-A; A12-W11K; E05-E; E07-H; E10-C04; E10-D01; E10-E04; E10-F02;
 J04-E04A; N05-D

L41 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2003 ACS
 AN 1998:555725 HCAPLUS
 DN 129:202856
 TI Preparation of fluorine-containing aromatic tetracarboxylic dianhydride as materials for polyimides
 IN Maeda, Kazuhiko; Tanida, Setsuo; Yamashita, Tsuneo; Shitakawa, Kazuhiro
 PA Sumikin Kako Co., Ltd., Japan; Daikin Industries, Ltd.
 SO Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C07D307-89
 ICS B01J027-08; C07B061-00
 CC 27-7 (Heterocyclic Compounds (One Hetero Atom))
 Section cross-reference(s): 35

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10226681	A2	19980825	JP 1997-32220	19970217
PRAI	JP 1997-32220		19970217		
OS	CASREACT 129:202856				
AB	1,1,1,3,3,3-Hexafluoro-2,2-di(3,4-dicarboxyphenyl)propane dianhydride (I) is prep'd. by oxidn. of 1,1,1,3,3,3-hexafluoro-2,2-di(3,4-dimethylphenyl)propane (II) with mol. O in AcOH or AcOH/Ac2O solvent in the presence of the catalysts contg. Co catalysts and Br compds. with Br/Co mol ratio of 0.5-1.5 and dehydration of an intermediate tetracarboxylic acid in Ac2O. II was oxidized in the presence of Co acetate tetrahydrate and KBr in AcOH under air at 170.degree. for 2 h, dehydrated in AcOH/Ac2O at 130.degree. for 1 h, and crystd. to give 81.2% I with 99.2% purity contg. 9 ppm Co.				

ST fluorodicarboxyphenylpropane dianhydride prep material polyimide;
 methylphenylpropane oxidn cobalt bromine **catalyst**

IT Polyimides, preparation
 RL: PNU (Preparation, unclassified); PREP (Preparation)
 (prep. of fluorine-contg. arom. tetracarboxylic dianhydride as
 materials for polyimides)

IT **Oxidation catalysts**
 (prep. of hexafluorodi(dicarboxyphenyl)propane dianhydride by
oxidn. of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 3016-76-0P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (in dehydration; prep. of hexafluorodi(dicarboxyphenyl)propane
 dianhydride by **oxidn.** of hexafluorodi(dimethylphenyl)propane
 and dehydration)

IT 5931-89-5, Cobalt acetate 7758-02-3, Potassium bromide, uses
 RL: **CAT (Catalyst use); USES (Uses)**
 (**oxidn. catalyst**; prep. of
 hexafluorodi(dicarboxyphenyl)propane dianhydride by **oxidn.** of
 hexafluorodi(dimethylphenyl)propane and dehydration)

IT 1107-00-2P
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP
 (Preparation)
 (prep. of hexafluorodi(dicarboxyphenyl)propane dianhydride by
oxidn. of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 108-24-7, Acetic anhydride
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or
 reagent); USES (Uses)
 (prep. of hexafluorodi(dicarboxyphenyl)propane dianhydride by
oxidn. of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 65294-20-4
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prep. of hexafluorodi(dicarboxyphenyl)propane dianhydride by
oxidn. of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 64-19-7, Acetic acid, uses
 RL: NUU (Other use; unclassified); USES (Uses)
 (**solvent**; prep. of **hexafluorodi**
 (dicarboxyphenyl)propane dianhydride by **oxidn.** of
 hexafluorodi(dimethylphenyl)propane and dehydration)

L41 ANSWER 12 OF 21 HCAPLUS COPYRIGHT 2003 ACS
 AN 1996:713017 HCAPLUS
 DN 125:328146
 TI Method for **oxidizing hydrocarbons**, alcohols or ketones
 by heterogeneous **catalysis** using manganese-containing
catalysts.
 IN Costantini, Michel; Fache, Eric; Gilbert, Laurent
 PA Rhone-Poulenc Fiber and Resin Intermediates, Fr.
 SO PCT Int. Appl., 19 pp.
 CODEN: PIXXD2
 DT Patent
 LA French
 IC ICM C07C051-31
 ICS C07C055-14; C07C051-215; C07C051-235; C07C051-245
 CC 24-5 (Alicyclic Compounds)
 Section cross-reference(s): 35, 45
 FAN.CNT 1
 PATENT NO. KIND DATE APPLICATION NO. DATE

PI	WO 9631455	A1	19961010	WO 1996-FR515	19960404
	W: BR, BY, CA, CN, CZ, JP, KR, MX, PL, RU, SG, SK, UA, US, VN				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	FR 2732678	A1	19961011	FR 1995-4428	19950407
	FR 2732678	B1	19970523		
	CA 2215472	AA	19961010	CA 1996-2215472	19960404
	EP 819110	A1	19980121	EP 1996-912067	19960404
	R: BE, DE, FR, GB, IT, NL				
	BR 9604863	A	19980526	BR 1996-4863	19960404
	CN 1183760	A	19980603	CN 1996-193786	19960404
	JP 10505867	T2	19980609	JP 1996-530042	19960404
PRAI	FR 1995-4428		19950407		
	WO 1996-FR515		19960404		
OS	CASREACT 125:328146				
AB	<p>A method is provided for liq.-phase oxidn. of hydrocarbons, alcs., or ketones, in the presence of a Mn-based heterogeneous catalyst. In particular, the method enables oxidn. of the above compds. to carboxylic acids using O₂ or an O₂-contg. gas, in an at-least-partial solvent for the product, and in the presence of a heterogeneous catalyst comprising at least Mn atoms incorporated into the crystal lattice of a mol. sieve. The liq. phase comprises a solvent generally selected from polar protic and polar aprotic solvents, and particularly from carboxylic acids and esters thereof. For example, cyclohexane was autoclaved over a Mn aluminophosphate catalyst (prepn. from Mn acetate and Al isopropoxide given) in the presence of AcOH and a small amt. of CH₃CHO, under 100 bar air at 105.degree. for 3 h, to give a cyclohexane conversion of 6.1%, a combined yield of cyclohexanol/cyclohexanone/adipic acid of 90.2%, and a selectivity of 57.4% for adipic acid. In contrast, use of a prior art Mn zeolite catalyst [Mn-exchanged HY zeolite] gave only 1.5% conversion and no adipic acid.</p>				
ST	<p>oxidn hydrocarbon alc ketone manganese catalyst; zeolite manganese catalyst oxidn cyclohexane; adipic acid manuf manganese oxidn catalyst; carboxylic acid manuf manganese oxidn catalyst; cyclohexanol manuf oxidn manganese catalyst; cyclohexanone manuf oxidn manganese catalyst</p>				
IT	<p>Alcohols, preparation Ketones, preparation RL: BYP (Byproduct); IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent) (byproduct and substrate; oxidn. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. catalysts)</p>				
IT	<p>Molecular sieves (catalyst; oxidn. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. catalysts)</p>				
IT	<p>Borosilicates RL: CAT (Catalyst use); USES (Uses) (manganese, catalyst; oxidn. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. catalysts)</p>				
IT	<p>Oxidation Oxidation catalysts (oxidn. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. catalysts)</p>				
IT	<p>Carboxylic acids, preparation RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)</p>				

- (product; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Esters, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvent; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Alkanes, reactions
Alkenes, reactions
Cycloalkanes
Cycloalkenes
Hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(substrate; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(Mn, **catalyst**; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Aromatic hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkyl, substrate; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(borosilicate, manganese, **catalyst**; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Perfluoro compounds
RL: NUU (Other use, unclassified); USES (Uses)
(carboxylic acids, **solvent**; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ferrisilicate, manganese, **catalyst**; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Silicates, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ferro-, manganese, **catalyst**; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Silicates, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(gallo-, manganese, **catalyst**; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(gallosilicate, manganese, **catalyst**; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(manganese aluminophosphate (MnAPO), **catalyst**; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)
- IT Carboxylic acids, uses

- RL: NUU (Other use, unclassified); USES (Uses)
(**perfluoro, solvent; oxidn.** of
hydrocarbons, alcs., or ketones by heterogeneous manganese-contg.
catalysts)
- IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(silicalite, manganese, **catalyst; oxidn.** of
hydrocarbons, alcs., or ketones by heterogeneous manganese-contg.
catalysts)
- IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(silicoaluminophosphate (SAPO), manganese, **catalyst;**
oxidn. of hydrocarbons, alcs., or ketones by heterogeneous
manganese-contg. **catalysts**)
- IT 108-93-0P, Cyclohexanol, preparation 108-94-1P, Cyclohexanone,
preparation
RL: BYP (Byproduct); IMF (Industrial manufacture); RCT (Reactant); PREP
(Preparation); RACT (Reactant or reagent)
(byproduct and substrate; **oxidn.** of hydrocarbons, alcs., or
ketones by heterogeneous manganese-contg. **catalysts**)
- IT 7439-96-5D, Manganese, zeolites contg.
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst; oxidn.** of hydrocarbons, alcs., or
ketones by heterogeneous manganese-contg. **catalysts**)
- IT 7439-89-6, Iron, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel,
uses 7440-03-1, Niobium, uses 7440-15-5, **Rhenium**, uses
7440-18-8, **Ruthenium**, uses 7440-25-7, Tantalum, uses
7440-31-5, Tin, uses 7440-33-7, Tungsten, uses 7440-45-1, Cerium, uses
7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-56-4,
Germanium, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses
7440-67-7, Zirconium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(cocatalyst; **oxidn.** of hydrocarbons, alcs., or ketones by
heterogeneous manganese-contg. **catalysts**)
- IT 124-04-9P, Adipic acid, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP
(Preparation)
(product; **oxidn.** of hydrocarbons, alcs., or ketones by
heterogeneous manganese-contg. **catalysts**)
- IT 64-19-7, Acetic acid, uses 126-33-0, Sulfolane 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvent; oxidn.** of hydrocarbons, alcs., or ketones
by heterogeneous manganese-contg. **catalysts**)
- IT 110-82-7, Cyclohexane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(substrate; **oxidn.** of hydrocarbons, alcs., or ketones by
heterogeneous manganese-contg. **catalysts**)

L41 ANSWER 13 OF 21 WPIX (C) 2003 THOMSON DERWENT
AN 1994-167323 [20] WPIX
DNC C1994-076659
TI Phenolic cpds. prepns. from hydroperoxide(s) - by acidic decomposition
using fluoro-boric, silicic or phosphoric acid, giving high yield and
purity.
DC B05 E14
IN ARAKI, S; HASHIMOTO, I; IWASAKI, H; MUKAIYAMA, T; OHNO, H
PA (MITC) MITSUI PETROCHEMICAL IND LTD; (MITC) MITSUI PETROCHEM IND CO LTD;
(MITA) MITSUI CHEM INC

CYC 20

PI WO 9410115 A1 19940511 (199420)* JA 21p C07C039-04
 RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
 W: CA KR US
 JP 06199718 A 19940719 (199433) 7p C07C039-04
 EP 622350 A1 19941102 (199442) EN 11p C07C039-04
 R: DE FR GB IT NL
 EP 622350 A4 19941221 (199543) C07C039-04
 US 5475157 A 19951212 (199604) 6p C07C037-08
 EP 622350 B1 19980415 (199819) EN 8p C07C039-04
 R: DE FR GB IT NL
 DE 69318007 E 19980520 (199826) C07C039-04
 KR 281849 B 20010215 (200212) C07C039-04
 JP 3364287 B2 20030108 (200306) 6p C07C039-04

ADT WO 9410115 A1 WO 1993-JP1586 19931101; JP 06199718 A JP 1993-253344
 19931008; EP 622350 A1 EP 1993-923680 19931101, WO 1993-JP1586 19931101;
 EP 622350 A4 EP 1993-923680 ; US 5475157 A WO 1993-JP1586
 19931101, US 1994-256245 19940902; EP 622350 B1 EP 1993-923680 19931101,
 WO 1993-JP1586 19931101; DE 69318007 E DE 1993-618007 19931101, EP
 1993-923680 19931101, WO 1993-JP1586 19931101; KR 281849 B WO 1993-JP1586
 19931101, KR 1994-702312 19940704; JP 3364287 B2 JP 1993-253344 19931008

FDT EP 622350 A1 Based on WO 9410115; US 5475157 A Based on WO 9410115; EP
 622350 B1 Based on WO 9410115; DE 69318007 E Based on EP 622350, Based on
 WO 9410115; KR 281849 B Previous Publ. KR 94703798, Based on WO 9410115;
 JP 3364287 B2 Previous Publ. JP 06199718

PRAI JP 1992-296146 19921105

REP EP 1043; JP 54052041; JP 57095930; JP 58032831; JP 60084235; JP 67001538;
 JP 74045854; US 3720716; US 4119791; US 4358618; US 4434305; DE 1493977;
 GB 2071662

IC ICM C07C037-08; C07C039-04
 ICS B01J027-12; B01J027-16; C07C039-06; C07C039-07; C07C039-08;
 C07C045-53

ICA C07B061-00

AB WO 9410115 A UPAB: 19940705

Aromatic hydroxyl cpds. Ar(OH)_n (I) are prep'd. by the acidic decomposition of a hydroperoxide of formula (II): (where Ar is an n-valent aromatic gp.; n is 1 or 2) using an acid **catalyst** tetrafluoroboric acid, hexafluorosilicic acid or hexafluorophosphoric acid (pref. at 20 ppm. to 5% wt. of the reaction mixt.). The reaction may be carried out in two stages; the first is at 50-95 deg.C. until the hydroperoxide concn. falls below 1% wt., and the second is at 80-120 deg.C., until the hydroperoxide concn. falls below 0.1%.

USE/ADVANTAGE - The aromatic hydroxy cpds. obt'd. are synthetic intermediates, esp. for synthetic resins, agrochemicals, drugs and dyestuffs. The prod. is obt'd. in high yield with low formation of hydroxyacetone by-prod..

In an example, cumene was **air** oxidised at 100-110 deg.C. in the presence of aq. sodium carbonate. The oily prod. was sepd. and evaporated to give a prod. contg. 80.39% wt. cumene hydroperoxide. This was introduced to a reactor at 120ml/hr. together with 42% aq. **tetrafluoroboric** acid as a 1% soln. in acetone

(52ml/hr.), giving a **catalyst** concn. of 1200 ppm. Reaction was at 75 deg.C. with residence time 20 minutes. The prod. was neutralised with sodium carbonate. The yield of phenol was 97% molar, and the hydroxyacetone content 390ppm. In a comparison reaction using sulphuric acid as the **catalyst** (2000ppm concn). the yield of phenols was 95% and the hydroxyacetone content 8700ppm.

Dwg.0/0

FS CPI
 FA AB; GI; DCN
 MC CPI: B10-E02; E10-E02A; E10-E02B1; E10-E02B2; N01-D01; N01-D03; N04-B

L41 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2003 ACS
 AN 1991:231483 HCAPLUS
 DN 114:231483
 TI Sulfuric acid recovery, especially from ferrous sulfate-containing waste acid from the manufacture of titania
 IN Matsumoto, Yukie; Hayashi, Takanobu
 PA Permelec Electrode Ltd., Japan
 SO Ger. Offen., 5 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC ICM C01B017-69
 ICS B01D011-04
 CC 49-2 (Industrial Inorganic Chemicals)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4026446	A1	19910228	DE 1990-4026446	19900821
	JP 03080103	A2	19910404	JP 1989-212936	19890821
	JP 2650065	B2	19970903		
	AU 9061164	A1	19910418	AU 1990-61164	19900820
	AU 621508	B2	19920312		
	US 5051187	A	19910924	US 1990-570488	19900821
PRAI	JP 1989-212936		19890821		

AB The process comprises electrolytically **oxidizing** the Fe(II) into Fe(III) ions, and removing the Fe(III) ions from the acid solns. by extn. using a solvent and an extn. agent. Thus, 1 L 20-wt.% H₂SO₄ contg. 20 g Fe/L (as FeSO₄) was electrolyzed using a RuO₂-coated Ti anode, a SUS 304 cathode, and a **hydrocarbon** polymer membrane, at 10 A/dm² for 3 h. The resulting Fe(III) ions were extd. with a **soln.** of 60 g **thenoyltrifluoroacetone** in 200 mL C₆H₆ to give H₂SO₄ contg. 50 ppm Fe, vs. 2050 and 1800 ppm for solns. only **oxidized** with H₂O₂ and NO_x, resp.

ST sulfuric acid purifn titania manuf; ferrous sulfate oxidn sulfuric acid; electrolytic oxidn ferrous iron; ferric sulfate extn sulfuric acid; benzene solvent extractant ferric sulfate; thenoyltrifluoroacetone extn agent benzene

IT **Oxidation**, electrochemical
 (of ferrous sulfate, in waste sulfuric acid from titania manuf., for ferric sulfate removal by extn.)

IT 7722-84-1, Hydrogen peroxide, uses and miscellaneous **7782-44-7**, **Oxygen**, uses and miscellaneous 7782-50-5, Chlorine, uses and miscellaneous 7790-92-3, Hypochlorous acid 10028-15-6, Ozone, uses and miscellaneous 11104-93-1, Nitrogen oxide, uses and miscellaneous
 RL: USES (Uses)

(**oxidn.** in presence of, electrolytic, of ferrous sulfate)

IT 7720-78-7P, Ferrous sulfate
 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (**oxidn.** of, electrolytic, in waste sulfuric acid from titania manuf., for ferric sulfate removal by extn.)

IT 10028-22-5, Ferric sulfate
 RL: REM (Removal or disposal); PROC (Process)
 (removal of, from waste sulfuric acid from titania manuf., by extn., electrolytic **oxidn.** of ferrous sulfate for)

IT 78-93-3, MEK, uses and miscellaneous
 RL: USES (Uses)
 (solvents contg., extn. with, of ferric sulfate, from waste sulfuric acid from titania manuf., electrolytic **oxidn.** of ferrous sulfate for)

IT 13463-67-7P, Titania, preparation
 RL: PREP (Preparation)
 (waste sulfuric acid from manuf. of, iron removal from, by electrolytic **oxidn.** and extn.)

IT 7664-93-9P, Sulfuric acid, preparation
 RL: PREP (Preparation)
 (waste, from titania manuf., iron removal from, by electrolytic **oxidn.** and extn.)

IT 7782-44-7, Oxygen, uses and miscellaneous
 RL: USES (Uses)
 (**oxidn.** in presence of, electrolytic, of ferrous sulfate)

RN 7782-44-7 HCAPLUS

CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O—O

L41 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2003 ACS
 AN 1990:177811 HCAPLUS
 DN 112:177811
 TI Fluorine-19 NMR study of the reaction of p-fluorobenzenethiol and disulfide with periodate and other selected oxidizing agents
 AU Evans, Brian J.; Doi, Joyce Takahashi; Musker, W. Kenneth
 CS Dep. Chem., Univ. California, Davis, CA, 95616, USA
 SO Journal of Organic Chemistry (1990), 55(8), 2337-44
 CODEN: JOCEAH; ISSN: 0022-3263
 DT Journal
 LA English
 CC 22-7 (Physical Organic Chemistry)
 OS CASREACT 112:177811
 AB The products of the reactions of both p-fluorobenzenethiol and p-fluorobenzene disulfide with oxidants were exmd. using ^{19}F NMR. Two commonly used mild oxidants (periodate and **hydrogen** peroxide), a non-**oxygen**-transfer oxidant [tetrannitromethane (TNM)], and a strong metal oxidant [**Au(III)**] were exmd. in several solvent systems. Under the conditions of our expts. disulfides are not **oxidized** by periodate, peroxide, or TNM. **Au(III)** is the only reagent that both **oxidizes** thiols and cleaves disulfides to sulfonic acids at room temp. In the periodate oxidn. of thiols, the products depends on the solvent and can be best explained if the reaction of periodate with a nucleophilic sulfur atom results in the formation of a complex or mixed anhydride. In aq. dioxane the products are disulfide and thiosulfonate. The thiosulfonate is formed by the reaction of sulfinic acid with sulfenic acid and not from the oxidn. of disulfide. In anhyd. ethanol, the products are Et sulfinate and the disulfide. Et sulfinate is formed by the reaction of a sulfinic/iodic acid anhydride with ethanol. The products in aq. ethanol appear to be a combination of the products obsd. in aq. dioxane and anhyd. ethanol. A thiosulfinate/periodate complex may also account for ester formation and other products obsd. during the oxidn. of unsym. thiosulfinates. Even though **hydrogen** peroxide is the most common oxidant for converting a thiol to disulfide,

it appears to be one of the poorer reagents to use, since the reaction yields sulfonic acid as well as disulfide. With TNM a sulphenyl nitrite is formed initially and then either reacts with thiol to give disulfide or isomerizes to a nitrosonium sulfenate to give thiosulfinate and thiosulfonate.

ST fluorine NMR oxidn product; fluorobzenethiol oxidn periodate mechanism;
solvent effect oxidn **fluorobenzene** disulfide

IT **Oxidation**

(of fluorobzenethiol and its disulfide analog, mechanism of)

IT Nuclear magnetic resonance

(of fluorobzenethiol, its disulfide analog, and their **oxidn** products, fluorine-19 and proton)

IT **Solvent effect**

(on **oxidn.** of **fluorobzenethiol** and its disulfide analog)

IT Coupling reaction

(oxidative, of fluorobzenethiol, mechanism with agents for)

IT 369-51-7 824-80-6 2905-15-9 61169-14-0 125568-44-7 125568-47-0,
p-Fluorobzenesulfonic acid

RL: PRP (Properties)

(NMR of)

IT 541-41-3, Ethylchloroformate

RL: PROC (Process)

(conversion of, to Et fluorobzenesulfinate)

IT 1333-74-0 7782-41-4

RL: PRP (Properties)

(nuclear magnetic resonance, of fluorobzenethiol, its disulfide analog, and their **oxidn.** products, fluorine-19 and proton)

IT 509-14-8, Tetranitromethane 937-14-4, m-Chloroperbenzoic acid

7722-84-1, Hydrogen peroxide, reactions 7790-28-5, Sodium periodate

65201-77-6, Tetrabutylammonium periodate

RL: RCT (Reactant); RACT (Reactant or reagent)

(**oxidn.** by, of **fluorobzenethiol**, mechanism and solvent effect on)

IT 16903-35-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(**oxidn.** by, of fluorothiophenol or its disulfide analog, mechanism and solvent effect on)

IT 371-42-6, p-Fluorobzenethiol 405-31-2

RL: RCT (Reactant); RACT (Reactant or reagent)

(**oxidn.** of, fluorine-19 NMR and solvent effect on)

IT 368-88-7P

RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. of)

L41 ANSWER 16 OF 21 WPIX (C) 2003 THOMSON DERWENT

AN 1988-147580 [21] WPIX

DNC C1988-065752

TI Process for producing alkyl group-substd. aromatic hydrocarbon(s) - enables prodn. with high yield and high selectivity.

DC A41 B05 C03 E14

IN ISHIBASHI, M; KURANO, Y; SAKAMOTO, N; TAKAHATA, K; TAKAI, T; TANAKA, M; TANIGUCHI, K

PA (MITC) MITSUI PETROCHEM IND CO LTD; (TANI-I) TANIGUCHI K

CYC 14

PI WO 8803523 A 19880519 (198821)* JA

RW: AT BE CH DE FR GB IT LU NL SE

W: US

JP 63122636 A 19880526 (198827)
 EP 288582 A 19881102 (198844) EN
 R: AT BE CH DE FR GB IT LI LU NL SE
 US 4891465 A 19900102 (199009) 11p
 EP 288582 B1 19920902 (199236) EN 19p C07C002-66
 R: AT BE CH DE FR GB IT LI LU NL SE
 DE 3781547 G 19921008 (199242) C07C002-66
 JP 06104630 B2 19941221 (199504) 6p C07C015-00
 ADT WO 8803523 A WO 1987-JP864 19871110; JP 63122636 A JP 1986-268049
 19861111; EP 288582 A EP 1987-907350 19871110; US 4891465 A US 1988-221246
 19880706; EP 288582 B1 EP 1987-907350 19871110, WO 1987-JP864 19871110; DE
 3781547 G DE 1987-3781547 19871110, EP 1987-907350 19871110, WO 1987-JP864
 19871110; JP 06104630 B2 JP 1986-268049 19861111
 FDT EP 288582 B1 Based on WO 8803523; DE 3781547 G Based on EP 288582, Based
 on WO 8803523; JP 06104630 B2 Based on JP 63122636
 PRAI JP 1986-268049 19861111
 REP 1.Jnl.Ref; JP 60001141; JP 60174730; US 4361713; US 4581215; GB 2144447
 IC ICM C07C002-66; C07C015-24
 ICS C07C002-86; C07C015-02; C07C015-14; C07C015-16; C07C037-08;
 C07C039-15; C07C043-26; C07C043-263; C07C067-08; C07C069-16
 ICA B01J029-18; C07B061-00
 AB WO 8803523 A UPAB: 19930923
 This improved process for producing alkyl group-substd. aromatic
hydrocarbons comprises reacting an aromatic **hydrocarbon**
 (1) with an alkylating agent (2) in the presence of a mordenite zeolite
catalyst treated with a fluorine-contg. cpd.
 The alkylating agent (2) is selected from olefins, aliphatic lower
 alcohols, and alkyl halides (pref. **propylene**). The pref.
 aromatic **hydrocarbon** (1) is biphenyl, dibiphenyl or naphthalene.
 The typical product is p,p'-diisopropylbiphenyl. The fluorine-contg. cpds.
 can be **hydrogen** fluoride, ammonium fluoride, CF₃Cl, SF₆. As an
 example, 4,4'-dihydroxybiphenyl is produced by the acid-decomposition of
 4,4'-diisopropyl biphenyldihydroperoxide which is obtd. by
oxidising 4,4'-diisopropylbiphenyl with **oxygen**.
 molecules. The above 4,4'-diisopropylbiphenyl is reacted with acylising
 agent to obtain 4,4'-diacyloxybiphenyl.
 USE/ADVANTAGE - The process allows the conversion yield of the
 alkylating reaction of the aromatic **hydrocarbon** to be raised and
 also allows a high selectivity. Useful as the intermediate for obtg. dyes,
 medicines, agricultural medicines, and as the material for liquid-crystal
 polymers.
 88065752
 FS CPI
 FA AB
 MC CPI: A01-E13; B10-E02; C10-E02; E10-J02B3; N06-A

 L41 ANSWER 17 OF 21 HCAPLUS COPYRIGHT 2003 ACS
 AN 1988:521440 HCAPLUS
 DN 109:121440
 TI Ammonium fluoroperoxomonophosphate dihydrate, [NH₄]₂[PO₂(O₂)F].2H₂O. First chemical synthesis of a fluorinated peroxophosphate
 AU Bhattacharjee, Manish; Chaudhuri, Mihir K.
 CS Dep. Chem., North-East. Hill Univ., Shillong, 793003, India
 SO Journal of the Chemical Society, Dalton Transactions: Inorganic Chemistry
 (1972-1999) (1988), (7), 2005-6
 CODEN: JCDTBI; ISSN: 0300-9246
 DT Journal
 LA English

CC 78-5 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 21

AB $[\text{NH}_4]_2[\text{PO}_2(\text{O}_2\text{F})_2]\cdot 2\text{H}_2\text{O}$ was prepd. from the reaction of $[\text{NH}_4][\text{H}_2\text{PO}_4]$ with 48% HF and 30% H_2O_2 at pH 10-11, maintained by the addn. of aq. ammonia, at an ice-bath temp. The compd. was characterized by chem. anal., IR and laser-Raman spectroscopic studies. It is capable, in presence of acid, of **oxidizing hydrocarbons**, alcs., olefins, and SO_2 .

ST org compd oxidn fluoroperoxophosphate; phosphate fluoro peroxy ammonium; peroxophosphate fluoro ammonium; fluorophosphate peroxy ammonium; oxidn property fluoroperoxophosphate

IT Oxidizing agents
 (fluoroperoxophosphate as)

IT Alcohols, reactions
 Alkenes, reactions
 Hydrocarbons, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (oxidn. of, by **fluoroperoxophosphate** in acidic soln.)

IT 15181-43-8P, Fluorotrioxophosphate(2-)
 RL: FORM (Formation, nonpreparative); PREP (Preparation)
 (formation of, in fluoroperoxophosphate oxidn. of org. compds.)

IT 67-63-0, 2-Propanol, reactions 71-36-3, Butanol, reactions 100-42-5,
 Styrene, reactions 110-83-8, Cyclohexene, reactions 120-12-7,
 Anthracene, reactions 7446-09-5, Sulfur dioxide, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (oxidn. of, by **fluoroperoxophosphate** in acid soln.)

IT 116240-85-8P, Diammonium fluorodioxo(peroxy)phosphate(2-)
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. and vibrational spectra and oxidizing property of)

IT 1336-21-6, Ammonium hydroxide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with ammonium dihydrogen phosphate and hydrofluoric acid and hydrogen peroxide, fluoroperoxophosphate by)

IT 7722-84-1, Hydrogen peroxide, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with ammonium dihydrogen phosphate and hydrofluoric acid in aq. ammonia, fluoroperoxophosphate by)

IT 7664-39-3, Hydrofluoric acid, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with ammonium dihydrogen phosphate and hydrogen peroxide in aq. ammonia, fluoroperoxophosphate by)

IT 7722-76-1, Ammonium dihydrogen phosphate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with hydrofluoric acid and hydrogen peroxide and aq. ammonia, fluoroperoxophosphate by)

L41 ANSWER 18 OF 21 HCAPLUS COPYRIGHT 2003 ACS
 AN 1988:157152 HCAPLUS
 DN 108:157152
 TI Oxidative recovery of **palladium catalysts** in acetic acid or **trifluoroacetic acid solutions**
 IN Murakami, Kazumi; Yamada, Rikuo; Tanimoto, Hirotoshi; Matsuo, Yoshio
 PA Babcock-Hitachi K. K., Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 IC ICM B01J038-52
 CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
 Section cross-reference(s): 45

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 62225251	A2	19871003	JP 1986-69313	19860327
PRAI JP 1986-69313		19860327		

AB The title method entails the use of an **oxidizing** agent from an O-coordinated complex of $MmXn.cntdot.Ll$ ($M =$ Group IB, IVB-VIIB, or VIIA element; $X =$ an anion such as Cl^- , Br^- , I^- , BF_4^- , PF_6^- , and SO_4^{2-} ; $L =$ org. P compds. (e.g., alkyl, alkoxy, or amide derivs. of H_3PO_4 or H_2PHO_3) or nitriles; $m, n =$ integers, $l =$ coordination no.) with alkali metal salt(s) AY ($A = Li, Na, or K; Y = Cl^-, Br^-, I^-, AcO^-, or CF_3COO^-$). An O-coordinated complex was formed by supplying **air** to a $CuCl.cntdot.PhCN$ complex soln. which was prep'd. from $CuCl$, PhCN, sulfolane, $LiCl$, $AcOH$, and **ethylene** glycol monomethyl ether. $Pd(0)$ was completely **oxidized** to $Pd(2)$ (e.g., $Pd(AcO)_2$) at 70.degree. in 2 min. The method was useful in oxidn. of olefins.

ST **palladium catalyst** oxidn recovery; **oxygen**
 coordinated metal complex recovery; alkali metal salt recovery; copper chloride benzonitrile complex **oxygen** coordination; acetic acid **catalyst** oxidn recovery; fluoroacetic acid **catalyst** oxidn recovery; lithium chloride **catalyst** oxidn recovery; sulfolane **catalyst** oxidn recovery; olefin oxidn **catalyst**
palladium recovery; acetate **palladium** oxidn recovery

IT **Catalysts and Catalysis**
 (oxidative recovery of **palladium** for)

IT **Oxidation catalysts**
 (oxidative recovery of **palladium** for, for olefin oxidn.)

IT Alkali metals, compounds
 RL: USES (Uses)

(salts, oxidative recovery of **palladium** with)

IT 126-33-0P, Sulfolane 546-89-4P, Lithium acetate 2923-17-3P, Lithium **trifluoroacetate** 67-68-5P, uses and miscellaneous 68-12-2P, DMF, uses and miscellaneous 7447-41-8P, Lithium chloride ($LiCl$), uses and miscellaneous 7550-35-8P, Lithium bromide 7647-14-5P, Sodium chloride, uses and miscellaneous 7705-07-9DP, Titanium chloride ($TiCl_3$), compds. with benzonitrile and **oxygen** 7718-98-1DP, Vanadium chloride (VC_3), compds. with benzonitrile and **oxygen** 7758-89-6DP, Copper chloride ($CuCl$), compds. with benzonitrile and **oxygen** 26445-81-8P, Dimethylsulfolane

RL: PREP (Preparation)

(oxidative recovery of **palladium** in soln. with, for **catalysts**)

IT 64-19-7P, uses and miscellaneous 76-05-1P, Trifluoroacetic acid, uses and miscellaneous
 RL: PREP (Preparation); USES (Uses)

(oxidative recovery of **palladium** in, for **catalysts**)

IT 3375-31-3P, **Palladium** acetate

RL: PREP (Preparation)

(recovery of, by oxidn. with **oxygen**-coordinated metal complex)

IT 42196-31-6P, **Palladium** trifluoroacetate

RL: PREP (Preparation)
 (recovery of, by oxidn. with oxygen-coordinated
 methanol complex)

L41 ANSWER 19 OF 21 WPIX (C) 2003 THOMSON DERWENT
 AN 1986-233778 [36] WPIX
 DNC C1986-100525
 TI Prepn. of crystalline aromatic polyether ketone with reduced viscosity -
 by polycondensing aromatic di hydroxy cpd. and aromatic di halo ketone,
 and mono hydroxy halo aromatic ketone, in aromatic ketone solvent.
 DC A25
 IN FUKAWA, I; TANABE, T
 PA (ASAHI) ASAHI KASEI KOGYO; (ASAHI) ASAHI CHEM IND CO LTD; (ASAHI) ASAHI KASEI
 KOGYO KK
 CYC 10
 PI EP 193187 A 19860903 (198636)* EN 32p
 R: BE DE FR GB IT NL
 JP 61197632 A 19860901 (198641)
 JP 62007729 A 19870114 (198708)
 JP 62007730 A 19870114 (198708)
 US 4757126 A 19880712 (198830)
 CA 1262000 A 19890926 (198945)
 EP 193187 B 19900613 (199024)
 R: BE DE FR GB IT NL
 DE 3671905 G 19900719 (199030)
 JP 05027648 B 19930421 (199319) 7p C08G065-40
 JP 05028245 B 19930423 (199319) 7p C08G065-40
 JP 05058014 B 19930825 (199337) 7p C08G065-40
 ADT EP 193187 A EP 1986-102516 19860226; JP 61197632 A JP 1985-36288 19850227;
 JP 62007729 A JP 1985-146650 19850705; JP 62007730 A JP 1985-146651
 19850705; US 4757126 A US 1986-833076 19860226; JP 05027648 B JP
 1985-36288 19850227; JP 05028245 B JP 1985-146650 19850705; JP 05058014 B
 JP 1985-146651 19850705
 FDT JP 05027648 B Based on JP 61197632; JP 05028245 B Based on JP 62007729; JP
 05058014 B Based on JP 62007730
 PRAI JP 1985-36288 19850227; JP 1985-146650 19850705; JP 1985-146651
 19850705
 REP EP 143407; FR 2335548; US 4051109
 IC C08G008-02; C08G014-00; C08G065-40
 AB EP 193187 A UPAB: 19930922

A crystalline aromatic polyether ketone with reduced viscosity at least 0.6, is prep'd. by polycondensing an aromatic dihydroxy cpd., with an aromatic dihaloketone, in a solvent with formulae (I) or (II), in presence of an alkali.

In formulae (I) and (II), R1, R2, R3 = H, 1-3C alkyl, or Ph; X = O, S or a direct bond; Y = O or a ketone gp.; n = 0 or 1.

Aromatic dihaloketone is a difluoroketone. The 2 monomers may be replaced by a monohydroxy monohalo aromatic ketone or an alkali metal salt, esp. a monofluoro cpd. In solvents, (I) X = O or S, or (II) n = 0, or n = 1 and Y = CO. The pref. alkali is an alkali metal (bi)carbonate.

USE/ADVANTAGE - Polyether ketone has high mol. wt., and excellent resistance to heat and chemicals, and good mechanical strength. The solvent is stable at high temp., accelerates the polymerisation, has no oxidising action, and in many cases is industrially available. The polymer is soluble in the solvent, giving easy stirring and suppression of gel formation due to local overheating. Prodn. of non-uniform polymers, e.g. with branched structure, is avoided. Use of the polymers is as shaped

articles, films, fibres, fibrils, or coatings, or for blends with other polymers, or for reinforced composites, e.g. with glass, C or aramide fibres, CaCO₃ or Ca silicate.

0/0

FS CPI

FA AB; GI

MC CPI: A02-A07; A05-H07; A05-J10; A08-S02

L41 ANSWER 20 OF 21 WPIX (C) 2003 THOMSON DERWENT

AN 1979-60689B [33] WPIX

TI Electrolysis of aq. alkali metal salt soln. - with oxidation of hydrogen in the cathode chamber using **oxygen**-contg. gas, esp. **oxygen**-enriched air.

DC E36 J03

PA (TOKU) TOKUYAMA SODA KK

CYC 1

PI JP 54084893 A 19790706 (197933)*

PRAI JP 1977-152333 19771220

IC C25B001-46

AB JP 54084893 A UPAB: 19930901

In the electrolysis of an aq. alkali metal salt soln. the formation of H₂ is prevented by **oxidising H₂** in the cathode chamber using a gas contg. 30 to 60 vol. % of **oxygen** as **oxidising** agent.

Typically an electrolysis cell having an effective electrode area of 0.5 dm² is used. The anode is made by coating **ruthenium** oxide on Ti mesh and the cathode is made by adhering a porous film of teflon (RTM) on the surface of Cu mesh plated with **Ag**, on which a wet mixt. of activated carbon and **Pd** is pressed under about 100 kg/cm² and dried. Between the electrodes, sulphonic acid type cation exchange membrane of **perfluorocarbon** series is arranged.

5N NaCl soln. is used in the anode chamber and 6N NaOH soln. in the cathode chamber and electrolysis is effected respectively at a current density of 20 and 30 A/dm² at 80 degrees C. A gas mixt. of **O₂** and N₂ whose **O₂** concn. is 20 to 100 vol. % is fed from the back side of the cathode chamber. In this case, the variation of cathode potential to partial pressure of **O₂** is large between and **O₂** concn. of 30 and 60 vol. %.

FS CPI

FA AB

MC CPI: E31-B01; E33-A; J03-B

L41 ANSWER 21 OF 21 HCPLUS COPYRIGHT 2003 ACS

AN 1970:85662 HCPLUS

DN 72:85662

TI Electrodes for fuel cells

PA Shell Internationale Research Maatschappij N. V.

SO Neth. Appl., 7 pp.

CODEN: NAXXAN

DT Patent

LA Dutch

IC H01M

CC 77 (Electrochemistry)

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

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PI NL 6810347 19700126 NL 19680722

AB Fuel-cell or air-depolarized cell electrodes are made of a high

resistance porous material as substrate to a layer of porous material with cond. much better than that of the electrolyte. The high-resistance substrate can be foam plastic; the conducting layer can act as a **catalyst**. The mean pore diam. is 1-8 .mu., and the layer thickness, 0.5-20 .mu.. The pressure of the fuel and **oxidizer** gases is generally 0.15 atm above the electrolyte pressure. The useful pressure range can be extended by spraying the electrode with poly(**tetrafluoroethylene**) or a **soln.** thereof known as Hilflon. A fuel cell with **H₂**, **O₂**, or **air** and 6M KOH electrolyte was equipped with electrodes with a Porvic (microporous poly(vinyl chloride)) substrate coated with porous **Ag** protected by **Rh** coated with a sputtered **catalyst** of C and 10% **Pd**. Sheets of the electrode material were sprayed with Hilflon aerosol on the **catalyst** side to 1-2 mg/cm² dry coating.

ST fuel cells electrodes; electrodes fuel cells; **air** depolarized electrodes fuel cells

IT Fuel cells
(electrodes, with polymer substrates)

IT Electrodes
(fuel-cell, with polymer substrates)

IT 9002-84-0, uses and miscellaneous 9002-86-2, uses and miscellaneous
RL: USES (Uses)
(in fuel-cell electrodes)